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June 29, 2022

22-3-5546

Wander The Resort
15841 Loyalist Parkway
Bloomfield ON K0K 1G0

Attention: Shannon Hunter

**Re: Wander The Resort – Fire Protection
15841 Loyalist Parkway, Bloomfield, ON**

Dear Ms. Hunter,

We have concluded our review of the fire protection water supply for the resort property at 15841 Loyalist Parkway, Bloomfield, ON.

Background;

The Greer Galloway Group was retained to complete an assessment of the water required to be stored on site for the purposes of fire protection at the resort development at 15841 Loyalist Parkway in Prince Edward County, Ontario. The property is located 180 m east of the Bass Lane, in Hallowell Ward, Prince Edward, Ontario.

The property is functioning as a resort and is zoned for tourist commercial. There are existing structures on the property and the proponent plans to add additional rental cabins.

Building Assessment

Building Characteristics:

There are four types of buildings proposed for the site, the clubhouse, the operations centre, small eco-cabins, and a pool house. The buildings are distributed throughout the property. This assessment is based on OFM guideline OFM-TG-03-1999 (Fire Protection Water Supply Guideline for Part 3 in the OBC) and NFPA 1142 (Standard on Water Supplies for Suburban and Rural Fire Fighting).

The development proposal is for multiple buildings on a single property. In that case NFPA 1142 indicates the water to be stored shall be the water required to protect the most significant structure by hazard classification and size. The operations centre is the most significant structure in the review package owing to size and occupancy. Building design is on-going; the following assumptions are based on the designs to this point:

- Building area – 2497 sq ft (232 m²)
- Ceiling height – 3.1 m each floor
- Construction – Combustible with fire separations
- Occupancies – Industrial (Group F, Division 2), Business (Group D), Residential (Group C)

Site parameters

The building falls within Part 3 of the Ontario Building Code

The building area is greater than 200 m² and is not an F-3 occupancy

Existing water supply

The property is not serviced by municipal sources. An existing well on the property serves a common distribution system.



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Required water supply

Under OFM-TG-03-1999 Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code there are four (4) categories of buildings to consider for the amount of fire protection required:

- 1) Buildings not requiring on-site fire protection water supply;
- 2) Sprinklered buildings;
- 3) Buildings requiring on-site fire protection water supply; and
- 4) Additions to existing buildings.

The category selection is based on an elimination basis. The building is not served by municipal water or a conforming transportable water supply according to the requirements of category 1. In accordance with the OBC (3.2.2.66), the building does not require sprinklers and does not fall in category 2. The building is new construction and does not conform to the requirements of category 4. Therefore, the building will require an on-site fire protection water supply under category 3.

The equation for fire protection water quantity is:

$$Q = K V S_{Tot} \text{ (Equation 1)}$$

Where

Q = Minimum supply of water in litres (L)

K = Water supply coefficient

V = Total building volume in cubic metres

S_{Tot} = Total of spatial coefficient values from property line and building exposures

As this building contains multiple occupancy types, each occupancy will be calculated separately, according to their space usage in the building. The Q values calculated from the occupancies will be summed together to find the total Q value.

As a building containing a Group D occupancy (Business) with combustible construction with fire-rated separations and in accordance with Table 1 of the OFM document, **the value of K is 18** for the Group D occupancy portion of the building. The Group C occupancy (Residential) is similarly rated for a K value, Therefore this analysis treats it as a single block.

The total floor area of the building is 232 m².

The entire building is three (3) storeys with a basement being used for a repair garage.

Each storey will be treated with an average ceiling height of 3.1 m (10 ft).

The group C/D building volume (V) is 2121 m³.

The S_{Tot} equation is :

$$S_{Tot} = 1.0 + [(S_{Side1}) + (S_{Side2}) + (S_{Side3}) + \dots + (S_{SideN})]$$

Where N is the number of exposures to be accounted. There is one exposure approximately 5 m from the operations centre.

The final value of S_{Tot} is 1.5.

Using the derived values in Equation 1, Q = 57,267 litres.

As a building containing a Group F-2 occupancy (Medium Industrial) with combustible construction with fire-rated separations and in accordance with Table 1 of the OFM document, **the value of K is 31** for the Group F-2 occupancy portion of the building

The garage floor area of the building is 232 m², and consists of only the basement level.

Each storey will be treated with an average ceiling height of 3.1 m (10 ft).

The group F-2 building volume (V) is 707 m³.

Using the derived values in Equation 1, Q = 32,875 litres.



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Summing the calculated Q values together, it is found, $Q_{total} = 90,142$ litres.

Following the procedure from *OFM-TG-03-1999* a minimum volume flow for 30 minutes is required. According to Table 2, because $Q < 108,000$ L, and the building has multiple storeys, the flow to be maintained is 2700 L/min. At a 30 minute draw, **the minimum prescribed water supply is 81,000 L.**

Required water supply

The development is multiple buildings on a single property. In that case NFPA 1142 indicates the water to be stored is the water required to protect the most significant structure. Based on the above assessment and the OFM Guideline, the volume of on-site water available for fire suppression should not be less than 81,000 litres (21,400 US Gal). Commercial water storage systems for this application are available in 20,000 L (10,000 US Gal) to 94,635 L (25,000 US Gal) capacities. Single or connected tanks will provide the required water storage. A dry hydrant connection to the tanks will be required for emergency services access.

Recommendation

Under the requirements of *OFM-TG-03-1999 Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code* a fire protection water volume of 81,000 litres (21,400 US Gal) shall be made available at 15841 Loyalist Pkwy Bloomfield, ON, to meet the requirements of the Ontario Building Code to protect the operations centre and associated structures. The recommended configuration for storage of water is a buried storage tank with a connected dry hydrant.

We trust this brief letter is sufficient for your present requirements, if you have any questions or point that require clarification, please contact the undersigned at your convenience.

Best Regards,

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**



**Peter Zandbergen, P. Eng.
Mechanical Engineer**